

**TOP FY 2000
Project Narrative**

Pangea Foundation

**Grant # 06-60-00015
San Diego, CA**

1. Project Purpose

As our society continues to advance technologically, our school children and adults with disabilities are perpetually left behind. Despite the positive impacts technology can have on their lives, persons with disabilities find it limited in access and not readily adapted to their needs. Part of the problem is that locally based organizations that serve persons with disabilities often have trouble keeping up with the ever changing Digital Age. Effectively utilizing Web technology in a way that enhances their ability to serve their constituency often exceeds the technical and financial capacity of smaller locally based nonprofits. Acquiring and maintaining an updated Web site is a major expense to lower-budget organizations that continuously struggle to meet their annual operating expenses. During our focus group research, we found many nonprofit organizations that serve between 2,500 - 10,000 persons with disabilities currently do not have Web sites, despite their acknowledgment that a Web presence could add tremendous value to the services they provide to the community.

The goal of *Abilities Networks* is to use information technologies to empower small locally based organizations to serve persons with disabilities. This system will establish and enhance communication channels among rural, inner-city, and urban community organizations, vocational rehabilitation counselors, and other groups that serve persons with disabilities and create an information clearinghouse of local resources and economic opportunities.

Abilities Networks accomplish this by providing end user tools and the technical framework for small locally-based organizations that serve persons with disabilities to deliver services to their community. *Abilities Networks* use web-based technology to create a Wide Area Network that facilitates communication and interaction between community organizations, vocational rehabilitation counselors, nonprofit agencies, and other groups that serve persons with disabilities. This system uses a series of preprogrammed Web Templates that are linked to interactive databases categorized by type of disability, geographical regions, and services offered to enable organizations linked to these networks to present information in a simple, user-friendly manner. This will create a clearinghouse of information regarding education, community services, medical resources, assistive technologies, grants, scholarships, social activities, and other local resources that enhance the civic participation and economic self-sufficiency of individuals with disabilities. Information can then be delivered to end user templates that adapt information to meet the users needs, for example with language translation or a larger print.

Abilities Networks will impact the community in several important ways. Local organizations will be able to use information technology to instantly inform the community of available services, events, and resources. Vocational Rehabilitation Counselors will be able to access this information, and place their students in educational programs, vocational training, or employment opportunities as soon as they are available. Individual end users will be able to access a centralized regional site that includes events, resources, and information that is a compilation of local organizations linked to *Abilities Networks*. This centralized site will enhance search capabilities and decrease the amount of time it takes to access information. Finally, *Abilities Networks* will ensure that any organization that serves persons with disabilities will have not only a web presence, but one that is well integrated within the community. This system is an ideal way to provide community organizations that serve persons with disabilities access to rapid, cost-effective, multi-user networks with minimal investment in hardware or operational training.

2. Innovation

An innovative technological characteristic of *Abilities Networks* is a unique blend of multicasting, Web authoring, and push technologies that create a series of Web templates that make generating, distributing, and gathering online content quick and simple. Transparent to the end user, these automated templates transfer content to relevant information constituents as needed. Content production is localized at the most peripheral layer of each network, and delivered directly to specific groups such as community organization, classrooms, and students. Content can be basic text, or more advanced digital data, such as voice and video.

Web templates are designed with the overriding assumption that effective community networks must place content development at the outermost layer of the user base. Most Web sites, or existing Web networks, while interactive in nature, are highly centralized in that they rely on the presence of a Webmaster or Infomaster to publish content. This paradigm limits the effectiveness of knowledge networking by restricting the level of content generated from the most relevant information constituents - in this case, locally based organizations that provide the most services to their communities.

Our program shifts this centralized paradigm by placing content development at the outermost layer of each network with innovative content production technology. This decentralized paradigm enables resources and services to be made available beyond the boundaries of any single institution. In addition, by placing content development in the hands of the peripheral layer of the community, both the capacity and usability of content is increased. With content providers located at the outermost layer, where their numbers can grow the quickest, the size of the networks will expand accordingly. Localizing content production also enables organizations to provide information in a format more precisely tailored to the needs of individual users.

Abilities Networks will also deliver information to participating organizations or individual users as requested via personalized end user templates. Information that is entered on regional, state, or national pages regarding grants, scholarships, upcoming events, etc., can be distributed to these individualized sites. These personal templates are far superior to email, list-serve, and bulletin boards currently in place as they enable end users to integrate applications and technology to adapt to their unique needs. This will be accomplished by integrating assistive technology for persons with disabilities into our systems, including voice recognition, voice synthesis, audio, and video. These advanced applications will create a series of next generation networks specifically for persons with disabilities that enable them to interact over online networks in ways previously unavailable to them.

Furthermore, local nonprofits that do have Web sites are finding that search engines often overlook their sites. National and international sites are overshadowing smaller organizations, creating a sense of irrelevance for the “little guy” on the Web. This is augmented by the fact that some nonprofits are offered free host space on another organization’s site, and thus located at a URL that make their sites impossible to locate without prior knowledge of their existence.

With the rapid growth of the Web, search engines will have increasingly difficult times indexing new content. As a result, smaller nonprofits that provide the most services to their communities will become even more challenging to find. This growth may ultimately be a detriment to persons with disabilities who rely on local organizations for multiple services. *Abilities Networks* will help filter and categorize the vast and overwhelming information on the World Wide Web. All local

organizations and information can all be accessed through each region's disability specific home page at www.abilitiesnetworks.org.

3. Diffusion Potential

Abilities Networks are model systems we plan to replicate and disseminate to community organizations across the nation. The digital, Web-based nature of this program will make rapidly expanding these networks to other communities feasible. Our web-based model puts less emphasis on end-user hardware and software requirements and more on centralized applications located on the same server. By merely providing a contextual framework and content production tools, while relying on the local community to input the content, we can focus on expanding these systems to more communities, rather than maintaining content. We feel this approach could replace the current model at many national nonprofit organizations that disseminate information from a top down paradigm rather than enabling local organizations to input content regarding regional issues, such as upcoming events, job openings, and education.

Furthermore, *Abilities Networks* can also be a model program for assisting Vocational Rehabilitation Counselors (VRCs) at schools across the nation to access vocational training and employment information. Over the past 10 years, the number of students ages 12 to 17 with disabilities has increased 30.7%. This has put more pressure on VRCs who often have to serve a variety of students at campuses in many locations, often 30 plus miles apart. *Abilities Networks* help link VRCs with schools, students with disabilities, their parents and/or families, and the vocational training and employment opportunities available to them.

The *Abilities Networks* technical framework can be a model system for any community of interest beyond organizations that serve persons with disabilities. These include environmental organizations, business roundtables, national associations, churches, and other groups that want to interface local organizations by region.

Our consortium will host an annual regional conference at the San Diego Supercomputer Center to disseminate information regarding *Abilities Networks*, discuss the progress of this project, and work with community organizations and individual end users to identify future directions to take the project. We will also disseminate information regarding *Abilities Networks* at industry conferences for persons with disabilities, such as the National Association of the Deaf, as well as at technology conferences, such as the National Educational Computing Conference. At many of these conferences we will set up booths to link organizations and train their staff on how to use the systems. We will also disseminate *Abilities Networks* through state government agencies, state education agencies, school districts, and local partners. In addition, information will be disseminated through the World Wide Web, educational and special education publications, technology publications, and hardware and software partners.

4. Project Feasibility

The technical approach used in the development of *Abilities Networks* will be a "staged delivery" model in which the software's functionality will be developed and delivered in stages with the most important functionality delivered first. The advantage of this approach is that we can deliver a basic system that performs the most important functions to the community as soon as possible. For example, Version 1 can be disseminated to and utilized by organizations throughout San Diego

County while we are developing Version 2. When Version 2 is ready for pilot testing, we can upgrade Version 1 users. Furthermore, based on the performance of Version 1 in our pilot test, we can make it available to the community while we pilot test Version 2. This model will help us put software in the end users hands as early as possible.

Staged delivery will also guarantee that users are involved in each stage of the process. This will help detect defects earlier in the project so they can be corrected closer to the time they were created, which makes them less expensive to fix. Staged delivery also reduces the technical risk of unsuccessful integration because it forces integration to occur at the beginning of the project rather than towards the end. This is of major importance to our project, as interoperability with other software and hardware components is a key element to integrating assistive technology.

For the TOP grant we will use a three-stage delivery model with the first stage based on a one year cycle, and the second and third based on six-month cycles. Within each implementation stage, the development team will conduct detailed design, coding, integration, alpha and beta testing, debugging, and pilot testing. At the end of each stage, we will have a releasable product.

Our consortium has the proven technical expertise, management, and leadership skills to bring this project to fruition. Most of the necessary software, hardware, facilities, and training have been donated to this program, so our budget focuses mainly on funding the necessary personnel to implement *Abilities Networks*, train community organizations, VRCs, and end users, and collect data for evaluations and system improvements.

5. Community Involvement

Abilities Networks have had a strong emphasis on community involvement since the inception of this project. Our consortium started a year and a half ago when a scientist from the Supercomputer Center found out that his 2-1/2-year-old daughter was diagnosed as severely hard of hearing. In an effort to find a Web site with local resources, he contacted Project NEEDS. When there was no Web site to offer him, it began a community-wide effort to start one. As a result, we ended up with a much larger vision. Since then, we have conducted formal focus group seminars at the Supercomputer Center that included all segments of the population, representing multiple disabilities. These included special education board members, teachers, parents, students, and community organizations. We also met with state and national agencies and associations, school districts, and even traveled to two colleges that are exclusive to students with disabilities.

Throughout this process, we researched what community organizations, K-12 schools, universities, and individuals wanted from *Abilities Networks*. We developed prototype systems on PowerPoint and then presented them to end users. We then received additional feedback, revised our prototypes, and presented them again for more comments. We revised our prototypes, presented them again, and finally developed functional specifications with the assistance of two technology consulting firms.

The support for our program was heightened at each stage throughout this process. Our positive feedback was almost universal, and summed up best in a letter of support by the San Diego Chapter of the United Cerebral Palsy Association; "Non-profit organizations such as UCP have limited budgets to purchase advanced technology. This linkage to *Abilities Networks* and *Digital Lockers*

will give our consumer base and our organization access to high quality multimedia and telecommunication networks that we would not otherwise have. In our efforts to provide assistive technology services to people with disabilities, this would greatly enhance our access to the best information available.”

Our *Abilities Network* partnership is lead by Pangea Foundation, a 501 (C)(3) nonprofit organization created in 1996 for the purpose of designing and developing network and telecommunication technology for schools and community organizations. Pangea Foundation will coordinate the day to day operations of this program and facilitate collaboration between technology, education, and community partners. Pangea Foundation will be responsible for software development, including overseeing code writing, systems integration, graphical user interfaces, and pilot testing. Pangea Foundation will contribute personnel including engineers, graphic artists for the “wallpaper” template themes, administrative support, office space and supplies, and continued financial support for host space and functional specifications.

The San Diego Regional Technology Alliance (SDRTA) is another lead partner of this consortium. The SDRTA has a program called Techropolis 2010, in which they install state-of-the-art computer networks in community centers throughout San Diego. 10 of the Techropolis centers will be designated as Abilities Network centers, and will include DSL lines, video conferencing equipment and assistive technology as needed for users with disabilities. SDRTA will conduct our evaluation component, as their direct involvement with the community centers put them in a position to collect, document, and analyze the usage and success of this system.

Project NEEDS is a “regionalized” special education organization that was started by the California Department of Education to increase access to and awareness of services for persons with disabilities in San Diego County. Project NEEDS represents youth and adults with disabilities in two counties (San Diego and Imperial) and 61 school districts. Project NEEDS will lead our community outreach and special education components, as well as serve as a liaison to the Vocational Rehabilitation Counselors. Project NEEDS will assist the SDRTA in on-site implementation, evaluation, and training seminars. Project NEEDS’ unique position in the community makes them an ideal organization to lead our outreach efforts as well. To date, they have coordinated our focus group seminars for *Abilities Networks*. Project NEEDS will identify and recruit new organizations to link to our networks. When an organization is identified as a partner, they will be invited to a training seminar or to use our Web-based instructions on preparing an interactive Web template.

The University of California, San Diego - San Diego Supercomputer Center (SDSC) has and will continue to provide their facilities for our focus group research, technical support, and personnel for content development. They will continue to make their facility available for training, video conferencing, and internships for UCSD computer science students working on this project.

In addition, many other organizations will play key roles in providing financial resources and/or assistance with project implementation and evaluation, including The California Department of Trade and Commerce, the California Department of Education- Special Education Division, San Diego City Schools, Deaf Community Services, and the United Cerebral Palsy Association.

6. Reducing Disparities

There are over 55,000 persons with disabilities and individuals that serve them throughout San Diego County. This number represents a diverse population spread over 70 miles of urban and rural communities and 61 school districts. This includes multiple races, ethnicities, and income levels. San Diego area schools have a diverse population with 26% of students classified as English Language Learners (ELL), speaking more than 50 different native languages. There is one empowerment zone, and over 54% of students in local area schools are eligible for free or reduced lunches, a federal indicator of poverty level. Since their physical limitations often prevent them from enjoying the educational and economic opportunities available to their peers, these individuals tend to be in lower socio-economic groups and dependent upon federal and state supplemental income. For example, in San Diego County, sixteen percent of economically disadvantaged residents between the ages of 14-72 years are persons with disabilities.

Abilities Networks is a systemic, grassroots program to get state-of-the-art technology, tools, and training to individuals with disabilities and the organizations that serve them. This program will decrease the physical barriers that prevent individuals with disabilities from using network technology by providing pragmatic learning and community environments. These include making special peripherals and assistive technology available at our 10 community centers, such as verbal input and output mechanisms, keyboard enhancements and replacement products, and large print and Braille displays.

The Web-based nature of this program will also facilitate our efforts to serve San Diego area residents in both inner city and rural neighborhoods. Many of these citizens have had limited access to community information and resources due to their geographical locations. Simple dial-up Internet access will enable end users and community organizations to utilize this system, and thus reduce reliance up video conferencing and framed relay services. *Abilities Networks* will integrate language translation into the online systems to enable end user to receive information in an alternative language. This will enable ESL user to participate fully in the civic, cultural, and community activities that increasingly take place online. Additionally, by working directly with San Diego County Vocational Rehabilitation Counselors, *Abilities Networks* will enhance the economic opportunities of persons with disabilities by empowering their counselors to meet their job training and employment needs.

7. Evaluation and Documentation

The San Diego Regional Technology Alliance (SDRTA) will conduct the evaluation, including compiling the data and conducting a variety of quantitative/qualitative reports. The SDRTA is a nonprofit community economic development organization, assisting the San Diego educational and business communities. The SDRTA 1) assists underserved communities enter the technological age and bridge the digital divide, 2) equips entrepreneurs with the tools to develop their technology businesses, and 3) conducts research to educate the region on using technology to foster sustainable economic growth. The SDRTA's experience partnering with various public and private, local, state and federal organizations to conduct analysis regarding technology-driven economic growth and support for emerging technology-based small businesses makes it an ideal evaluator of the *Abilities Network* program.

The *Abilities Network's* key stakeholders are the TOP grant managers, community organizations that serve persons with disabilities, persons with disabilities, partner organizations, and other potential cities and communities that may use the program. The *Abilities Network* will receive inputs from the TOP grant, matching funds from partner organizations, and in-kind funds from partners,

community organizations, and corporate entities. In-kind contributions can include hardware and software donations from identified corporate partners. The activities include implementation of the *Abilities Network* system, training staff and users, and installing the required systems in community organizations.

The outputs of the implementation will be preprogrammed Web templates linked to interactive databases that allow users to filter and categorize the vast amount of information available on the web to meet the needs of their specialized community. In essence, the *Network* will provide community organizations a rapid and cost-effective tool for reaching their specialized communities. Establishing a communication channel for these organizations creates a clearinghouse of services, thus, increasing the ability of persons with disabilities to access resources available to them. *Abilities Network* will also provide a platform to train staff and users on utilizing web tools, which will allow them to train new staff and users with ease and increase the effectiveness of their services. Installing the needed software and hardware in the community organizations will increase collaboration between community organizations that can use these web tools.

The desired outcomes are: 1) an increased web presence of community organizations that serve persons with disabilities, 2) easy-to-use systems that are user-friendly to persons with disabilities and their corresponding organizations, 3) increased awareness by persons with disabilities of the support mechanisms available to them, 4) increased access to resources for persons with disabilities that lead to a better quality of life and greater access to employment opportunities.

The number of organizations using the web tools is a standard outcome indicator. The interim target would be to increase the number of community organizations participating in the *Abilities Network* by 10 percent initially and to increase that to 20 percent annually. After the project has been implemented, tracking the number of hits to the site and by how much it grows over a specified length of time will also serve as an outcome indicator. The target would be the increased number of users utilizing community services through the *Abilities Network* to 30 percent and increasing that by 10 percent annually. The following indicators will also measure outcome variables:

Community - Increased awareness of community resources, access to resources, interaction with community organizations, involvement in community projects, increased communication between community organizations and individuals with common interests

Education - Increased access to educational resources, increased ability of schools to meet local, state, and federal education requirements, increased academic performance

Research - Increased awareness of current research, increased awareness of research findings, increased participation in research projects

Career - Increased awareness of career opportunities, increased readiness of career requirements, increased employment, increased on-the-job assistance

Grants/Scholarships - Increased awareness of grants/scholarships, increased application to grants/scholarships, increased receipt of grants/scholarships

Assistive Technology - Increased access to assistive technology, increased awareness of assistive technologies, increased adaptation of technology to end user needs

The evaluation will be performed at multiple time frames throughout this program to assess both the short-term and long-term effects of *Abilities Networks*. A random sample of users will be asked pre- and post-use questions. Sites will also be expected to track use through customer sign-in forms

and activity tracking forms. The evaluation will be conducted through a template that is embedded in our system that tracks usage, performance, and overall effectiveness of each network. The evaluation will analyze trends of usage over each network for separate users, e.g., students, schools, community organizations and compare them with other networks and geographical areas. This will help identify what trends have contributed to the success of one group of end users over another. A comparison of the number of resources and with what frequency they are used will be done in a pre- and post-stage of the project. Data will be collected to measure the impact to end users, grant recipient, project partners, and other beneficiaries. An analysis of problems encountered, including unanticipated outcomes, will help define the potential for replicating the program and its expansion, as well as methods for improving existing systems.

All users will also be asked to participate in our online evaluation program, which will include surveys with numerical ratings, open-ended questions, and general feedback comments. Industry experts will be invited to evaluate our systems in an effort to solicit their recommendations for improvement. Technology experts will include board members of SDRTA, engineers from the San Diego Supercomputer Center, and other local and national technology corporations.